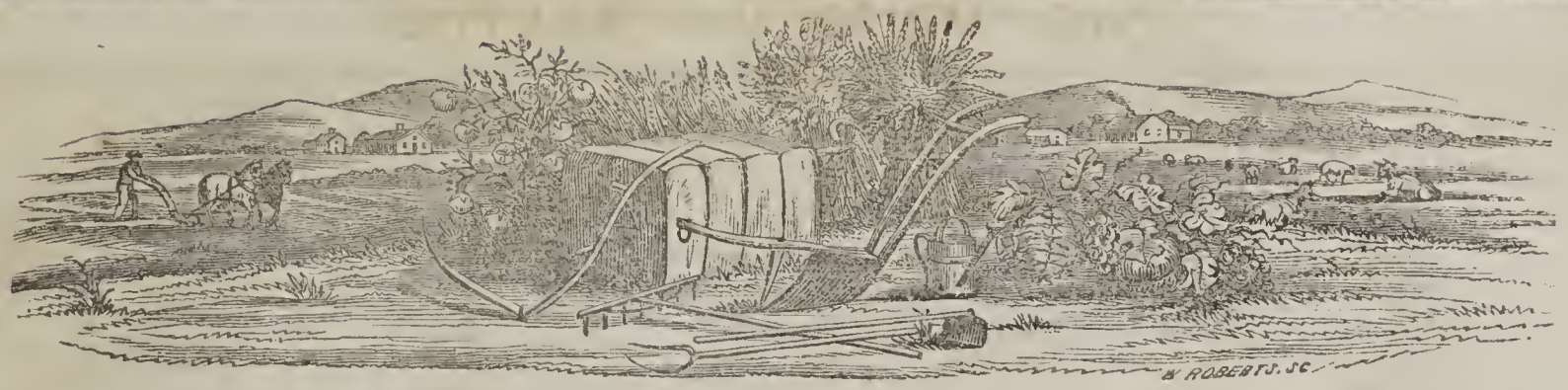

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ADDRESS

Of the Hon. W. F. [illegible], delivered before the Pendleton Farmers' Society, at its Anniversary Meeting, held October 10, 1850.

(Continued from page 132.*)*

THE loosening of the soil by plowing is not, as is generally supposed, beneficial as a mere mechanical means of fitting the soil for the growth of plants and killing grass. But the plough both extends the surface and divides the mass into small particles, both of which affords an easier access to the atmospheric elements, and thus, by making degradation more rapid, serves to shorten the fallow.

The period of fallow may be also abridged by the application of lime, as is much practised on stiff clayey soils in England, which it does by giving a more rapid decomposition to vegetable matter by decomposing the silicates of the soil.

The operation of burning lands, also exercises the same favorable effects on clayey soils, by facilitating the disintegration of the particles of rocks, stones and sand, whence the supplies of soluble salts and silica are derived. Water, or at least moisture, must always be present when degradation goes on. Consequently, shade, because it prevents the sun from drying up the moisture, also facilitates degradation and shortens the fallow. Humus too, which has an extraordinary power of attracting moisture and oxygen from the air, by being turned up with the plough, if there be much of it in the soil, will rapidly add the moisture necessary to facilitate degradation. Irrigation, or overflow by water, also facilitates degradation and will shorten fallow.

But there is no process yet discovered to supercede the use of fallow altogether, except by applying in manure annually the elements the crop takes away. The use of fallow [illegible]ally understood is to renew exhausted soil. Rotation of crops, however, has been long practised under a belief that some plants are exhausters, some not. But its good effects are only to delay exhaustion.

Chemists disclose how it is that rotation of crops is useful, and how it may be usefully employed. The reason why Leibig has classed the plants we cultivate as lime, silica and potassa plants, is because different plants take up more of one than the others of these elements; for instance, oat straw and seed take 62 parts out of every 100 of silica and only a trace of lime. Pea straw or vines take 63 of lime out of every 100 and only a trace of silica; which makes it very plain that if you plant oats and peas alternately, the exhaustion of that soil will be longer delayed than if you sow oats or peas for a succession of years. Our own experience shows us that the elements whish furnish food for plants, are in our soils in limited quantities. Hence the necessity of rotation—for by growing plants in rotation that feed on different food, the exhaustion may be longer delayed. Any rotation, however, that has yet been discoverd only serves to delay—final exhaustion must be the consequence of any rotation, without a re-supply in some way of the food necessary.

Our author says that of the 56 elements now known to exist, the plants that grow out of the earth feed on only 9 of them.—And although different plants take these up in different proportions, yet each plant must have some of all the 9, even if it be a trace only. It is true that experiments have proven that plants will grow for a while when some of these 9 elements are wanting, and even luxuriantly; yet when they come to form seed it has been ascertained that the seed are either rotten or will not come up. If, then, any of these nine elements, say silica, were only in such quantity as to be just a little more than enough for one crop of oats, that land would be exhausted. And for oats, that land would be exhausted for ever, if the silica were not supplied either by degradation or manure. While for a crop of peas, which takes but little silica and mostly lime, the soil would not be exhausted, but would bring as full a crop of peas as if the previous crop of oats had not been grown on it. Long before science was applied to Agriculture, rotation was practised and the necessity of it seen. But the reason was in doubt. Many theories have been suggested why rotation is necessary and the reason for it.—Among others, and that too among the most specious, is the theory that plants secrete certain matters which they cast out by the roots, and that the accumulation of these matters in the soil after a succession of the same crop in the same place, exercises an injurious effect on future crops of the same plant, but may even be a manure for other species of plants. And therefore rotation is necessary. Petzholdt says of this theory,

it is a fallacy, experiments have failed to prove it. Besides, the facts rested on by this theory, are not true. Successive crops of grain may be grown in Hungary year after year continually in the same soil. And if a sufficieney of stable manure were applied annually, to supply the exhaustion of the previous year's crop, any plant in cultivation may be grown on the same soil successively, without any limit.

Let it be granted that different plants draw from the earth, unequal amounts of the nine elements for their support, and all the observed facts are at once explained. And the propriety of rotation, and the different plants to make the rotation with, are evident. He says, however, that no system of rotation will do for a country. A difference of soil and climate, as well as the quantity of rain, would make a change in the system necessary. And that so great is the diversity, that almost every farm must have a system of its own—which, to be perfect, must be arranged after a careful analysis of the soil and the plant you wish to grow.

Petzholdt undertakes to deny, too, that turning in a green crop of rye or oats improves the soil. He lays it down as a fact, indisputable, that all plants which grow out of the earth, take all the mineral constituents they contain from the earth—and their gasses from the atmosphere. And that when they decay or are burned, the earthy ingredients return to the earth and the gases to the air. Consequently, by turning in green rye, or any of the cerials, you only put back into the soil, what the crop turned in had taken from it. And altho' this fact applies to turning in all green crops for manure, yet by turning in tap rooted plants, as clover and pea-vine the operation is different. For although by turning under any green plant you only give back what the plant had taken from the soil, yet the effect of turning in tap rooted plants, is to take what they have drawn from low down in the soil, and place it on the top soil. And in that way improve the fertility of the top soil for wheat, and all plants that draw their nourishment from the top soil. Forest trees mostly send roots deep down into the earth.—One instance has occured, I have been told, of a root half inch in diameter being found while digging a well in our own village at the depth of fifty feet.—What these roots get deep in the earth they send up into the tree to form wood, leaves and fruit. When the leaves drop and the tree dies, they lie on the surface and add that much to the soil. So of tap rooted plants, what they feed on is below the soil usually stirred with the plough; and, therefore, having taken nothing from the top soil they do not exhaust it. And when they are turned into it, all they have drawn from below is that much added to the top soil. In this way they make the top soil richer. But a plant that feeds on the top soil alone, as rye and wheat, cannot enrich it, for it can only put back what it has taken out. If it improve at all, as many think it does, it must do it by in some way facilitating degradation. This may be possible. For it is known that the hardest freezes in this country will not freeze the surface of hard earth deeper than three or four inches; when if a foot in thickness of earth be loosely thrown on a bunch of straw or corn stalks, the same degree of cold will freeze it through—and so will ground subsoiled a foot deep be frozen the whole depth, and may be wet through by an ordinary rain. And when water freezes it expands and in this way acts mechanically in breaking apart the soil and opening it for the easier access of the elements of the atmosphere.

He contends, therefore, that clover and all that family of plants called trefoiled or three leafed, all being tap-rooted, are the only green crops that can improve the soil by being turned in. In this class of plants, clover, lucern, vetches and all the tribe of peas are embraced.

He recommends, therefore, although no general system of rotation can be adopted for a whole country, yet in part it may, and that part is to let the lime, silica and potassa plants follow each other with a crop of the trefoils to be added.

This is the reasoning of Petzholdt in favor of the rotation of crops and the manner of making the best use of them. He, however, makes some other statements which I think make it at least doubtful whether rotation is the better plan to delay exhaustion in all cases.—He admits that no rotation yet discovered can do more than delay, but cannot prevent exhaustion. The question whether exhaustion cannot be longer delayed by planting the same crop, say corn, in succession, is one of fair examination. I will do so by his own testimony. He says the stalk which has produced an ear of corn to full development, has taken 12 per cent. of all it has taken from the soil. Of this 12 per cent. the ear takes 4 to mature it. I take corn and wheat for the illustration, because it is the rotation most usual among us. Now if you plant corn the first year and remove stalk and all from the ground, you have abstracted from the soil that year 12 per cent of whatever is taken by the crop. If the next year you sow wheat and take likewise from the ground the straw as well as wheat, by the wheat crop you have abstracted 7 more. This makes in two years 19 per cent., and in four years 38 per cent. By planting corn in succession four years and putting back in the ground the stalk every year, you will only have taken 16 per cent., instead of 38 per cent. For as the stalk takes 12 and gives to the ear 4 per cent., by putting back the stalks you put back 8 of the 12, and really take from the field only 4 per cent. every year, which in four years makes 16 per cent. · If the facts taken from our author be fairly stated the conclusion is inevitable. That four crops of corn grown in succession on a piece of land, with the stalk, fodder and shuck imbedded in the soil annually, will take less of the elements of the soil necessary to grow corn, than would be taken by two crops of corn and two of wheat from the same piece of land with the stalks and straw all taken off with the grain. I am aware that this idea is advanced in the face of the general practice of a thousand years, and can only be proven by trial. If, in addition to the crop of corn, a pea crop be also grown and the vines embedded with the corn stalks every year, this being a tap rooted plant would add the whole it had taken from bottom soil to the top, and would render the experiment less objectionable. If this conclusion should turn out to be a true one, it would bring with it many advantages. Every farmer might dock his cultivated lands one-half or two-thirds—he could put in the pea-vines and corn-stalks in the same ground they grew on with less labor than manuring by any other system. I have thrown out these ideas and leave it with you—to be candid, I have not entire confidence in its truth. But I will proceed at once to the last branch of the subject—how exhaustion may be restored by manure.

Continued cultivation with the benefit of fallow only, and no manure, has in all civilized countries reduced the land to barrenness. Nor can rotation of crops do more than delay exhaustion. Manure, therefore, is the only sure and certain remedy. And this will not only restore what has been taken away by crops, but can be so applied as to give our worn out lands a fertility far beyond what it had in

its virgin state. Plants derive from the soil only inorganic matter, (salts and soluble silica). If, therefore, the whole crop of a given field, stalks, grain and all, were burned and the ashes put back on the same field, all that that crop had taken off would be restored again to the field. This field would then be in the same condition it was before the crop was planted; and, if this process were continued, would grow the same crop well without limit. But we must have the harvest. It is our duty, therefore, to restore in manure the inorganic elements which the seed we take off for food has taken from the soil. If this were done annually, that soil would remain of the same fertility. Manuring, then, is designed to replace as completely as possible the inorganic constituents of the soil taken up by the last crop. To do this understandingly, you must know what elements the crop has taken up—and you must know whether the manure you propose to give the land contains these same elements.

There is but one source from which all manure can be made, and that is from the products of the earth. The earth has given out to them all the elements which have been necessary for their full development, and these elements must be given back to the earth before it can be restored. This may be done by collecting the products of the soil—burning them, and restoring the ashes—or by feeding these products to animals and collecting what is cast off by them, and restoring this to the soil. Our author says that in studying the passage of vegetable matters through the bodies of animals, we find their several constituents subserve various purposes in the animal organism. The carbonaceous constituents of plants are chiefly applied to the support of respiration, and the production of animal heat—-and in these processes they are converted into carbonic acid and water, and are thus restored in their original form to the atmosphere whence they were derived. The nitrogen of plants, after having served the purposes of nutrition, passes out of the animal body and the decomposition which ensues on putrefaction, converts their nitrogen into ammonia, and thus it too is restored to the air in the same form it was originally derived. In this manner all the constituents that are derived *from* the atmosphere are returned again *to* the atmosphere.—Now the constituents of plants, which are derived from the soil, when used for food, go in part to make blood, muscles and bones, after various transformations are separated from the organism by secretion and cast out. The ashes of these are found to contain the same elements precisely which were in the food that was eaten. The phosphate of lime which has gone into the bones, is the only part that is lost to the farmer. And this, tho' lost to him for a time, is after being buried in the grave ultimately restored to the earth. The most natural way to resupply the soil with the inorganic elements necessary for plants, our author says, is to give back to the soil all the dead bodies of the animals on the farm, and the feces of all the living ones. This with all the decayed vegetable matter comprises the main source of manure.—The practical experience of a thousand years has established the benefit of employing all these substances for manuring the land. Theory or science had nothing to do in this. Only recently, however, has science sought and discovered the reason of this favorable influence, and also the kind of manure that is suitable for a particular plant. All theories not based on science or experience, often serve to lead us astray. Thus the humus theory, hitherto much in vogue, ascribed the efficiency of manure principally to its supplying the new crops with the nitrogen and carbon necessary to their growth. But we have seen that these elements are derived from the air and not from the soil. And we have seen, also, that the benefit of manure consists exclusively in the supply of salts and soluble earths which it contains.

Several interesting experiments are here detailed by our author—made, too, with great care in France, all going to show that the crop experimented on contained a much larger quantity of nitrogen and carbon than was contained in the manure applied—in some instances twice the quantity—which goes to show conclusively that the air, and not the manure, was the source from whence these were drawn. Besides, so much has been found out, as to render it impossible to understand and explain the known influences of manure on the humus theory, and that we must look to mineral constituents of plants, for a correct understanding of the benefits of manure. This is, in fact, the main principle of the new theory.—This theory rejects the usual definition of manure, together with the distinction between stimulating and nutritive, but considers all manures as nutritive—and nutritive in the precise proportion as they contain the saline and earthy salts essential to the growth of plants. He therefore classes manures into vegetable, animal and mineral, simply founded on the origin of the various kinds. Vegetable manures, he divides again into green manure or plants, used in their green state, humus manure, or plants used after having undergone decay or putrefaction; and ashes manure—the ashes remaining after the plants have been burned. Green vegetables, except of the tap-rooted kind, he considers as useless. Because, as has been before explained, those plants which grow on the surface soil can only put back, when turned in, what they had taken out of the soil in their growth, and therefore cannot enrich. But it is different with the tap-rooted plants. Their roots descending much below the soil broken by the plough, what they get there to feed on is brought up into the plant, and when that plant is turned into the top soil, it makes it that much the richer, and better adapted to the growth of the cereals, or such plants as feed altogether on the surface soil.

Humus, or vegetable matter, is valuable as a manure just in proportion to the inorganic elements which it contains. For, being composed of vegetable matter in a decayed state, it can have no other inorganic matter than the vegetable matter had, of which it is composed. And if that vegetable matter had been dried and burned, its ashes would have disclosed precisely the same ingredients the humus made of it would have, decay and combustion being the same in their effects on plants. Such a thing therefore as vegetable humus, without inorganic constituents, cannot exist, and all inferences drawn from the favorable effects of humus upon vegetation, without regarding their ingredients, must be altogether fallacious. The richness of humus, therefore, depends entirely upon the vegetable matter of which it is composed, as well as the plants to which it is adapted. For instance, humus made of decayed lime plants, is best adapted to the growth of lime plants—so of silica and potassa plants. Because, the humus made of these plants, contains the inorganic elements necessary for the food of plants of the same kind. Assuming, then, that this theory of manures is established, both upon the results of practical experience and scientific reasoning, we may assume that it is altogether indifferent whether the salts and earth needed for crops are

carried to the soil in humus, or whether we apply them in the shape of ashes obtained by burning vegetable substanees. A great many praetieal experiments support this assumption. Humus manure has a mechanieal effeet on the soil. It gives out its salts and earths very slowly. Were it not for these reasons, the ashes of humus might be applied with equal or greater advantage. Ashes, like humus, have only the inorganic elements of the substances of whieh they are made.

Now as manuring is designed to furnish the soil with the elements needed by the plant you grow, it is obvious that the substanees intended for manure should have sueh salts and earths as the growing crop requires. Either ashes or humus made from vegetable substances, have very little of the phosphates, they are therefore of no use when the phosphates are wanting. The same may be said of the sulphates. But they are of great use when the silicates are wanting. Wood ashes, or humus, made by decayed wood, are composed of mueh more valuable inorganic elements, because the wood has many more, being rieher in earbonates, phosphates and sulphates. They are valuable as manure for almost all the plants we grow.

As to all the animal manures, so much is known of these already by experienee, it would be useless to dwell upon them. I will give you what he says about lime, and eonelude—referring you to the author himself, for a full account of the value of animal manures.

Quick lime is most frequently used with a view to directly fertilizing the soil. It can only answer this purpose in a slight degree, or in a few rare instances. For owing to the exceedingly profuse diffusion of lime upon the surface of the earth, all plants will find enough for their purpose. Yet, lime applied as manure, has a happy effect on some soils. Quick lime greatly accelerates the decomposition of humus, whether of animal or vegetable origin, and thus liberates its salts for the use of plants. It also extends a favorable influence on soils, which contain silicates, whieh it is desired to disintegrate more speedily than the agency of the atmosphere would accomplish.—But as quick or slacked lime it is not taken up by the roots of plants. When there is neither humus nor undecomposed silicates in the soil, the application of lime will be useless.

Of all the methods hitherto used for manuring land, irrigation is the most rapid and eomplete.

In conclusion, I think we may safely infer, that as the atmosphere maintains invariably the equilibrium of its constitution, and from its constant contact with the entire surfaee of plants, it is fair to presume that the air will, in all time, furnish a full supply to plants of that food they draw from it. And therefore there is no neeessity of furnishing any supply artificially. But it is different with respect to the nourishment plants derive from the soil. They do not exist in exhaustless abundance, nor do they accumulate in the soil in the same ratio as eultivated plants require. It is indispensable that an artificial supply should be carried on to eultivated soil, whence large amounts are annually taken by the crops.

Further. It has been shown that the different species of plants cultivated, require from the soil different mineral constituents, and therefore, a rational system of manuring is only profitable when the espeeial wants of every speeies of plants are known, and the constituents of the soil in each speeial locality are also known. For example, guano is an excellent manure on a soil containing a suffieient amount of disintegrated silicates. It produces no effeet on ornamental plants requiring no phosphates.

To the science of chemistry the Agrieulturist must look for the future improvement of his art. There is still mueh to be done in the way of pure scientific investigation, as well as applying our knowledge in practice, before Agrieultural chemistry can be perfect. But it only requires the hearty co-operation of the scientific chemist and the practieal agriculturist, to draw from it results, not only tending to enrieh individuals—to support and augment the wealth of States, but to confer a universal and permanent benefit upon all mankind.

Report of the Committee on Rice—Dr. R. E. Elliott, Chairman.

In Ramsay's History of South Carolina it is stated: "Landgrave Thomas Smith, who was Governor of the Province in 1693, had been at Madagascar before he settled in Carolina. There he observed that Rice was planted and grew in low, moist ground. Having sueh ground in his garden, attaeked to his dwelling in East Bay, Charleston, he was persuaded that Rice would grow therein, if seed could be procured. About this time a vessel from Madagascar being in distress, came to anchor near Sullivan's Island.—The Master enquired for Mr. Smith, as an old acquaintance. An interview took place. In the course of conversation Mr. Smith expressed a wish to obtain some seed Rice to plant in his garden. The cook being called, said that he had a small bag of Rice suitable for the purpose. This was presented to Mr. Smith, who sowed it in a low spot in Longitude Lane. From this small beginning did one of the great staple commodities of South Carolina take its rise, whieh soon became the chief support of the colony and its great source of opulence."

Such is the historical account of the introduction of Rice into South Carolina; and from that day to this, it has constituted one of her staple articles of production. Although the climate and soil were found admirably suited to the plant, the planters encountered incredible difficulty in preparing, or dressing, the Rice for market. From the day of its introduction to the close of the Revolution, the grain was milled, or dressed, partly by hand and partly by animal power. But the proeesses were imperfect—very tedious, very destructive to the laborer, and very exhausting to animal power. The planters regarded a good crop as an equivocal blessing, for if the produet was great, so in proportion was the labor of preparing it for market. While matters stood thus—the planters were released from their painful condition by a circumstance, so curious, that it deserves a place in the history of human inventions. A planter from the Santee, whilst walking in King street, Charleston, notieed a small windmill perehed on the gable end of a wooden store. His attention was arrested by the beauty of its performanee. He entered the store and asked who the maker was. He was told that he was a Northumbrian, then resident in the house—a man in necessitous cireumstances and wanting employment. A conference was held—the planter carried the machinist to the Santee—pointed out the difficulties under whieh the planters labored, and the result was the Riee Pounding Mill. This man was the first Mr. Lucas, and to his genius South Carolina owes a large debt of gratitude. For what the Cotton planter owes to Eli Whitney, the Rice planter owes to Mr. Lucas. His mills were first impelled by water, but more recently by steam—and though much mechanical ingenuity and much capital have been expended in improving them, the Rice Pounding Mill of this day, in all essential particulars, does not differ materially from the mill as it came from the hands of Mr. Lucas.

This great impediment being removed, one formidable difficulty still remained in the way of the Rice planter, and that was the threshing of the crop by flail. The labor requisite to accomplish this was so great, that we once heard a distinguished planter say while having one large crop threshed out by the flail, that he would regard another large crop as a calamity. Previous to 1830, threshing mills had been tried by various individuals, but with no apparent success.—In that year the attempt was renewed, and we were present and witnessed the first trial of a thresher constructed in New York, and which was tested on Savannah river under the auspices of General Hamilton. The machinery was driven by apparatus similar to that employed for driving the cotton gin. The result was not very satisfactory, but there was ground

for hope. The planters persevered, and after the outlay of very large sums, and after many disappointments, the happy expedient was thought of, of testing the mill with steam instead of animal power. The experiment was completely successful, and it was manifest at once that the difficulties had not been in the imperfect construction of the thresher, but in the insufficiency of the moving power.

It is now twenty years since we witnessed the working of the small mill alluded to, and the Rice threshing mill with steam engine attached is now a splendid piece of operative machinery. The Rice in sheaf is taken up to the thresher by a conveyer, it is threshed, the straw taken off, then thrice winnowed, and twice screened—and the result in some cases exceeds a thousand bushels of clean rough rice, the work of a short winter day.

Humanity rejoices at these inventions—at this transfer to water and steam of processes, so slow and so exhausting to the human as well as to the animal frame—and in this feeling we are confident every planter deeply sympathises. Moreover, the relief they have afforded in other respects, has been perfectly indescribable. Previous to these improvements, all the finer portions of the winter were appropriated exclusively to the milling and the threshing of the crop with the flail—yet it is manifest they added not one particle to the value of the property—indeed while going on, all other work and all preparation for another crop had to be suspended, so that the condition of the plantation was not progressive but retrograde.

A short recapitulation will show what has been accomplished by the enterprise of our planters in the last seventy years. At the close of the Revolution, it is believed, the rice fields were poorly drained, and when broken up were chiefly turned with the hoe, then trenched with the hoe; then came three or four hoeings and as many pickings. The Rice was then cut with the sickle and carried in on the head, then thrashed with the flail, then milled and dressed—in some cases wholly by human labor, and in others by a rude machine called a Pecker mill. Now, in 1850, the hoeings, the pickings and the cutting with the sickle, remain unchanged; but the lands are better drained, and in turning, the plough has superceded the hoe—the trenching when necessary, is done by animal power—the Rice when cut is carried in on flat and wagon, then threshed and milled by machinery, so perfect, that it is difficult to imagine how it can be surpassed.

It is one hundred and fifty-seven years since the introduction of rice into Carolina, and there are grounds for supposing that our people have accomplished more during that period, in the cultivation and preparation of this grain, than has been done by any of the Asiatic nations who have been conversant with its growth for many centuries. We had the rare opportunity a few years since, of seeing a Chinese book on rice planting, which contained many engravings. The language we could not read, but we comprehended a sufficient number of the engravings to institute a comparison between their system and our own, and the result was, in our method of irrigation we were their equals—while in economy of cultivation and in the preparation of the grain for market and for use, we were greatly their superiors. Again—some six or seven years since, the East India Company, of London, sent an agent to this country to procure American cotton seed, cotton gins and overseers for the purpose of testing the practicability of raising cotton by our method, in India. This agent, Capt. Bayles, when in Savannah, was heard to say, that he had especial directions from the Company, to inform himself minutely of our whole system of rice culture. Here, then, was an embassage from the banks of the Ganges—a spot where rice has been cultivated probably for twenty centuries, to enquire into the method of cultivation and preparation of a people, amongst whom the grain had no existence one hundred and sixty years ago.

Rice, it is well know, constitutes the chief bread stuff of the millions who inhabit Central Africa, Hindoston, Bumah, China, and the magnificent Islands of the Indian Archipelago. With the view, it would appear, of guarding against the improvidence so characteristic of the inhabitants of inter-tropical countries, a wise and benificent Creator has invested rice with a coating which is the most indestructible of all vegetable substances. The haulm, or chaff of rice, is in fact a vegetable sand paper, and when enelosing the grain entitles it most justly to be called rough rice. After being milled, rice is readily destroyed by the weevil; but so far as our information goes, rough rice is totally exempt from the depredation of every species of insect—if stored carefully, therefore, it will be as good for food at the end of twenty, perhaps a hundred years, as it was the very day it was gathered from the field. The indestructibility of the chaff has long been known to planters, but the cause was not suspected—about seven years ago it was analysed, and the analysis solved the mystery—the ash of the chaff of rice contains ninety seven per cent. of silica.

It is a very interesting agricultural fact, that the two Carolinas and Georgia produce the finest cotton and the best rice which are found in the European markets. The sea-island cotton of our seaboard has been sold at one dollar per pound and stands without a rival, while the rice of Carolina and Georgia commands generally nearly twice the price of East India rice. In the paper of September 23rd there occurs the following quotation from the English market.—Fine white Bengal rice 11 shillings.—Town dressed Carolina from 22 to 26 shillings.—In the same paper Havre prices are as follows—Bengal 16 francs, Carolina 28 to 29 francs per 50 killogrammes, and it is worthy of note that the superiority of our rice is the grain itself and not the milling—as we shall now proceed to show. Rice when pounded and dressed in this country deteriorates dreadfully if sent on long voyages during the summer season; it becomes musty and weevil eaten. To obviate this difficulty the rice pounding mill after having been invented and perfected in Carolina has been transplanted to various parts of Europe for the purpose of supplying the foreign market with a fresh dressed article.—This arrangement has led to an increased consumption and has been highly profitable to the planters. To these mills large quantities of rough rice or paddy, which is its Asiatic and commercial name, are taken both from this country and from the East, but though milled by the same processes and the same machinery, the Carolina rice commands on an average double the price of East Indian. This proves conclusively that the superiority of the Carolina rice is in the grain itself and is probably the result of a more favorable climate and of better methods of cultivation.

Previous to the revolution the great bulk of the rice crop was the product of inland swamps, but these have been generally abandoned and the mass of the crop is now taken from the tide swamp lands. Tide swamp lands well adapted to the growing of rice are found almost exclusively within the limits of the two Carolinas and Georgia; on the rivers emptying into the Gulf of Mexico there are lands on which rice may be planted, but the rise and fall of the tide in the Gulf being only two feet the fall does not admit of drainage sufficient for successful cultivation. For similar reasons, that of climate being superadded, the culture has not been attempted north of Cape Hatteras where the rise and fall of the tide is only three feet. On the coast of Georgia and the Carolinas the tide rises and falls from six to seven feet and this is the rise and fall which the planters themselves would have selected had the matter been left absolutely to their own decision.

These tide swamp lands being limited to a small extent of the sea-board by these peculiarities of the tide, they are limited in another respect and by causes equally inexorable; in ascending our rivers from the ocean as soon as you reach that point where the water is fresh at high tide the cultivation of rice commences; proceeding upward the rice plantations are found occupying both shores of the river until you reach a point where the liability to freshets is so imminent that the cultivation is no longer warrented and there the rice plantations abruptly terminate. On none of our rivers does the distance from the lower to the upper limit exceed twelve or thirteen miles and on some of them it is even much less than that, moreover, all the lands between these limits are not of equal value. In hot, dry summers, the salt water from the ocean transgresses the lower limit, and the planter being unable to irrigate, the crop is impaired or lost, while in wet seasons the freshets transgress the upper limit and the rice is submerged immoderately and unseasonably, and when this occurs near harvest, the crop is a failure. Midway between these limits there lies

a body of land of no great extent measurably exempt from both these causes of damage, which are usually denominated lands *on the best pitch of the tide.* These are the most valuable lands in the state and command from 100 to 150 dollars per acre. Of the 16 or 17 millions of acres included within the limits of South Carolina, these tide swamp lands constitute so small a fraction, that were they abstracted from the mass of the state, their loss would scarcely be perceptible—yet the gross product of these in an average of seasons does not fall short of two millions of dollars per annum.

To be continued.

Burning Woods Again.

Messrs. Editors:—Absence from the State, and a monopoly of my time since my return by engagements that could not be deferred, have prevented me from paying my respects at an earlier period to the article of "Broomsedge" in a late number of your paper, in opposition to the policy of burning the woods, which he seems to think a patriotic duty on his part, lest Pry's "earnest and ready pen' should make converts to the policy, against which his communication is intended as an antidote; and which he concludes with expressions of surprise "that there should be found at this day advocates for burning the woods, and particularly so, in a region somewhat notorious for good farmers and close observers."

As truth is the object of all our enquiries in reference to the great interests of agriculture, I should regret exceedingly to be instrumental in winning converts, either to erroneous opinions or practices. But Broomsedge must excuse me if I shall chance to make a somewhat strenuous defence of the opinions I have assumed on this subject, after long and mature deliberation, sustained, as I conceive them to be, by the clearest indications of philosophy and experience.

He says, in reference to the first position that it improves the productive powers of the land: "We take issue, and after reading carefully Pry's article, think he has failed to prove his point most signally." Again—"to cite the practices of the aborigines on the subject, is certainly resorting to very strange authority on agricultural subjects." Again—"to argue that the astonishing yield of the Western lands proves the fact, is certainly strange." And adds—"Has the geological formation of the country nothing to do with it! Could the immense quantities of lime found in the Western soils have come from burning the woods? Could the rich *alluvial* soils of the West have been produced by it? If burning the woods be *all* that is necessary to improve the soil, there is no excuse for having poor lands in many parts of the country."

The reading of the above paragraph, I own, placed me in a dilemma, rendered the more perplexing by the accompanying declaration of the writer, that he had read Pry's article carefully. But my embarrassment subsided when on referring to my communication, I could find no traces of the sentiments thus ascribed to me. Had I read the above paragraph alone, and been ignorant of the fact, that it was a studied attack upon my position, I should never have recognized in it the slightest application to myself. I did not cite the practices of the aborigines as authority on agricultural subjects, for I distinctly stated, "that they did it without any view to an improvement of the soil, in which they could have felt little or no interest." I did say, and intimate, that the astonishing yield of the Western lands, and often in situations not justified by their appearance, resulted from this cause in an eminent degree. But my chief reliance for proof of the fact, was on "the Western prairies" as contradistinguished from the forest lands, and consequently in nowise indebted for their unsurpassed fertility, to the action of the roots of trees and condensed thickets on the subsoil. But I neither said nor intimated, "that the geological formation of the country had nothing to do with it." I did not say nor intimate, "that the immense quantities of lime found in the Western soils came from burning the woods." I did not say, or intimate, a *word* in reference to the rich *alluvial* soils of the West, much less ascribe their vast fertility to burning the woods, when all agree that it has resulted from the action of water. Nor did I say, or intimate, that "burning the woods was all that was necessary to improve the soil," for if I had, I should have felt myself pledged to sustain with him the sentiment "that there was really no excuse for having poor land, in many parts of the country."

In the next paragraph he says, "Pry argues that the exclusion of the sun, by the dense thickets and undergrowth where woods are not fired is injurious, to the soil." Here again Broomsedge has entirely misconceived my argument. I certainly have neither said nor intimated, that the exclusion of the sun from the earth's surface, exercised a pernicious influence on the soil. The evil resulting from shade, and the twilight gloom, more than once alluded to, was ascribed, not to the exclusion of the sun, but to the grasses, flowers and annual plants, which have been exterminated by the condensation of our forests.

Broomsedge may have read my article carefully, but judging from the many palpable misconstructions which I have exhibited above, I am bound to suspect that their appearance in a communication from one who wields such a ready and able pen, must have been the effect of a *currente calamo* and that his article was prepared with that precipitate haste, with which one arranges his toilet when roused from his slumbers by a fire bell at night. Nor are his notions as to the credulity of mankind less remarkable, than his construction of my sentiments has been erroneous. It is certainly strange, that he should have had the least fear, "that the earnest and ready pen of Pry" should be able to make converts to such doctrines, and that he should have felt it a patriotic duty to say something on the opposite side by way of antidote.

I might now proceed to answer the three questions which he proposes to me, and which embrace the material points of the controversy between us, and in the order in which he has presented them.—He says let Pry answer us this question: "Would not the undergrowth of an unmolested forest extract from the subsoil, as much potash, soda, lime, magnesia, &c., as his carpet of luxuriant grass, flowers, and annual plants." From the very moderate concessions asked for in the above question, I am almost tempted to give him all the advantages of an affirmative reply. Can it be that he can hope to vindicate the policy of condensed thickets, over open woods, and splendid grass plains, even though they extract from the soil, and deposit on the surface, *no more* of the fertilizing principles than the grasses and annual plants? But as my answer to his next question will be equally appropriate to the one under consideration, I will only add here, that the amount of the above inorganic constituents taken from the soil by the action of plants depends, not only on the quantity of these ingredients therein contained, but also on the tastes and wants of the plants themselves. And as potash enters largely into the organism of the forest trees, it is probable that as much or more, of this material would be taken from the soil annually when unmolested by fire.—But no one, I presume, will doubt that a crop of the red clover would find, and appropriate, more lime in a single season, than all the shrubbery of a condensed forest together.

Secondly. "Would not a greater quantity of organic, and inorganic matter be returned to the soil by the slower decomposition of leaves, twigs, &c., in these dense forests than by burning them off annually?"

In order to obtain a clear and compre-

hensive view of the points involved in this part of the enquiry, it is necessary to examine for a moment the relative influence of the organic, and inorganic constituents of the soil, in the economy of vegetation. It is admitted on all sides that the fertility of the soil depends on the presence of these ingredients, and that the maximum of production can only be attained, where they exist in due proportion. Lands cannot be made rich by the largest amount of inorganic manure simply. Nor is the converse of the proposition less true, that an excess of organic matter, is equally unfavourable.

The value of a soil depends almost entirely upon the amount of its inorganic constituents. Where these exist in sufficient quantity, the organic materials soon follow as a natural consequence. The first is the primary and paramount consideration, the latter a mere incident resulting from the former. A soil wholly destitute of inorganic manure, is of necessity a *caput mortuum*, and without the means of self renovation. Nor can it be improved until these indispensable materials are applied to it.

The above facts strongly sustain the conclusion, that our forest lands are seldom, if ever, deficient in organic matter. Nor does the experience of the whole country in the cultivation of fresh lands, less clearly indicate the fact. The first year the most unsatisfactory returns are looked for, whilst its highest capabilities are expected on the second—a period just about sufficient for the decomposition of its organic materials.

But although the organic and inorganic constituents of soils are most commonly present in proportions most favourable to production, there are, nevertheless, some palpable exceptions. There are at least two kinds of land in this country which serve to establish the above conclusion, There are lands almost barren even in the fresh state, which yield remunerating crops when dressed with manure plentifully supplied with inorganic materials. And secondly, there are those having the dark color and loose texture of the richest soils, that are also unproductive, but for a very different reason, not that they were formerly deficient in inorganic materials, but because they have become too abundant in organic matter? Need I ask Broomsedge how this evil is to be obviated. Need I tell him that our most scientific planters, and especially in the lower half of the State where these lands abound most, have discovered a summary way of making them productive? No I need not, he already anticipates me. His language is burn them.

The reasons that recommend this policy, are as evident as the results have been satisfactory and conclusive. There can be no doubt in respect to the lands in question, but that the balance between the growth and decay of their vegetable productions has been interrupted, and decomposition retarded, either from the influence of localities unfavorable to the process, or from the antiseptic influence of acidity, and perhaps other causes.—The soil in this case is neccessarily unproductive. It has been taxed for a series of years, and gradually deprived of its mineral manures to form this mass of organic matter, in whose undecomposed tissues it is still retained, in a condition as little subservient to the uses of the vegetable kingdom, as if it had been removed from the land by an exhausting succession of tillage crops. By burning such lands, the whole amount of their alkaline constituents are at once returned to the soil, where they serve the double purpose of neutralizing acidity, accelerating decomposition, and forming with carbonic acid alkaline carbonates, the appropriate food of plants.

From this outline of the causes which influence the productive powers of soils, I feel that I am prepared to enter the forest with friend Broomsedge at my side, strongly impressed with the belief, that a few hours stroll through the gloomy recesses of our tangled thickets, will scarcely fail to convince him that lands thus covered with undergrowth, are precisely in the condition of those we have been considering. This vast amount of vegetable production, has been reared at the expense of the soil on which it stands, and all this has been accomplished within the last half century.

Will it be argued that the undergrowth of an unburnt forest derives its principal sustenance from the subsoil. The very opposite is the fact. Broomsedge has totally misconceived their functions, if such are his notions. Every plowman familiar with the cultivation of fresh lands will tell him, that their roots for the most part pervade the surface soil, where they are found as condensed and as completely interwoven as the filiaments of a cobweb. No, no, it is the larger forest trees, the venerable oaks and towering pines, invulnerable for centuries past to the annual firing of the natives, whose roots descend deep into the earth, and bring up and deposit on the surface, the lime, magnesia, potash &c., considered by Broomsedge as so highly compensating. But as a matter of interesting significance I beg him to bear in mind, that these sturdy oaks, these most efficient co-laborers in the work of renovation, exist with my carpet of grasses, flowers, and annual plants.

No one can doubt but that if the entire amount of this undergrowth was burnt upon these lands, and the ash equally distributed, that it would be greatly impoved by the process. And yet the operation would only have restored to the soil, that which had been taken from it by the intruders. But where lands are cleared and most of the timbers removed, and the residue burnt in heaps, as now universally practised, the whole amount of the ash is concentrated at distant points, and the great body of the land, after rearing this immense mass of vegetable matter, is not permitted to share this final division of the spoils.

But Broomsedge, I am convinced, puts too high an estimate upon this process of enriching lands from the sub-soil through the agency of the roots of these condensed thickets. There can be no doubt that something is gained in this way, but that it is one of the most inconsiderable of all the known means of improving lands, I am equally confident.—He asserts with an air of triumph, that "if burning the woods is all that is necessary to make lands rich, there can be no further excuse for poor lands, &c." In reply he must allow me to say, that if the growth of our forests enrich lands at the expense of the subsoil in any appreciable degree, there can be no reason given under Heaven, why our country should abound in poor lands, since the process has been in constant operation ever since the foundation of the hills was laid.

There can be no doubt that learned and scientific men have fallen into very erroneous conclusions, on this subject, by ascribing effects to causes that have had no sort of agency in the matter. The power of self-renovation in soils, whether at fallow, or allowed to grow up and form secondary forests, is regulated by the nature of its component parts. In calcareous regions, a few years rest at fallow, effectually reclaims the land. But if a crop of the red clover is turned into it during the interval, it becomes much more highly fertilized. And all this is accomplished in a most summary manner, without the aid of those shrubs and bushes, from which Broomsedge anticipates such great advantages. But in soils not calcareous, and where the rocks that furnish the mineral manures are not present, lands at fallow improve very slowly, nor does the turning in of vegetable matter afford very encouraging results. Yea, more, where our waste lands have rested until densely covered with half-grown pines, they are very soon exhausted by a succession of the tillage crops. Facts, which prove conclusively, that the improvement in both cases has resulted for the most part from a disintegration of the soil, instead of the agency of the roots of plants upon the subsoil.

The strength of land is most commonly estimated by the height and magnitude of its timbers. But although this, as a general rule, leads to correct conclusions, yet it neither proves that its fertility has been obtained from the subsoil through the instrumentality of the roots even of the forest trees, nor that it would not have been more fertile if the inorganic materials contained in a large proportion of its timbers, had been returned to the soil by annual firing.

But I will assume for the sake of argument, and a still clearer illustration of my views, that this process of absorbing potash, soda, lime, &c., is in constant and successful operation, and that a portion of these constituents is returned to the surface by the decay of leaves, twiggs, &c. Will it be argued that the *land* is gainer by the process, or rather, does it not follow as an inevitable consequence, that the materials thus deposited, are promptly reabsorbed by that net work of roots which pervades the whole surface in these impenetrable thickets, and which, instead of enriching the soil, only increas-

es the obnoxious condensation already existing,

in the present condition of our forest lands, the greater part of the inorganic constituents of the soil has been absorbed, and fixed in the organized structures of a young and vigorous secondary forest, which must continue to tax the land for centuries to come, in a ratio totally disproportionate to the very scanty return from the decomposition "of its leaves and twiggs." Yea, until from the condensation of inhabitants, there will be no woods to burn.

Third question. "Would not the rains injure the soil more by washing when annually fired, and would not the ash of the plants burned, be generally washed away!"

In reply I would simply observe, that as the annihilation of the undergrowth of our forests is invariably succeeded by a crop of grasses, and annual plants. I am unable to conceive of a condition better calculated to obviate the evil alluded to. The plan adopted in all grazing countries, is to set their hill-sides, and broken lands in the grasses, which effectually prevents them from washing. As respects the loss from the ash being liable to wash away, it requires but a moment's reflection upon the condition of the soil at the time of firing, to quiet all apprehensions on that point. The time selected is always during the prevalence of dry weather, and the consequence must be, that the first drops that reach the earth, dissolve the ash, and sink at once into the dry ground.

The writer next proceeds to give an extract from Professor Johnson, apparently for the purpose of proving the existence of a palpable difference between the results of combustion, and ordinary decomposition. But if the authority of A. Petzholdt, a late and luminous expounder of agricultural chemistry, is to be relied upon, the hypothesis is without foundation. He assumes, the ground that plants, during decomposition, give back to the earth those materials derived from the earth, and to the atmosphere those derived from the atmosphere. If such is the fact, it will be readily perceived, that there is really no practical difference in the result of the two processes. For although nitrogen and ammonia where vegetable matter is consumed by fire, may escape in an uncombined state and mingle with the air. The same according to the authority of Petzholdt occurs in the case of ordinary combustion.

From all that I have read in respect to the composition of soils, and the economy of vegetation, I have never been impressed with the least solicitude in regard to that portion of the food of plants derived from the atmosphere. I look upon it as an inexhaustible store house, equally favorable to production, in every locality, and in all latitudes, and one from which each plant can readily obtain an ample supply for all its wants. Where a soil is abundantly supplied with the necessary inorganic manure, I can have no fear that plants reared on its bosom, will ever decline for want of atmospheric pabulum.

I will only add, in conclusion, that I look upon the neglect to fire our forests annually, as practised by the native Indians, as one of the most remarkable omissions of public duty ever chargeable upon an enlightened people. No one feature in the inviting prospect has so much pleased the western emigrant, as its open woods, and widely extended grass plains. For this the hardy pioneer abandons the home of his nativity, and willingly encounters the rugged scenes of frontier life, and finds himself amply repaid in the ready means of support which every where present themselves. Such was once the happy condition of our own country. And such even now is the condition of northern Georgia. But even here the same want of foresight will lead to the usual consequences. From a habitual neglect to fire the woods, shrubs and bushes will over run the present crop of grasses, designed by a benificent Creator as food for animals.

In all the old and highly improved states of Europe and the United States, the one-half at least of every improved farm is set in grass, though purchased at a cost of one hundred dollars per acre.—But with us the inealculable advantages derived from this source are not considered worth the trouoble of an annual fireing of the woods, and our grazing animals, notwithstanding our immense forests, maintain a half starved existance on the proceeds of our tillage crops, reared at a heavy cost of human labor. A lamb on our mountain sides will attain the size of its mother in less than a single season, whereas it will take two years in the country where firing is not practised.

The blue grass is one of the greatest resources of Kentucky, and yet, great as are its advantages, they are obtained, not at the expence of felling, or even deadning the forest trees, but simply removeing the shrubs, bushes, and perennial plants. In like manner, by an annual firing of our forests, the undergrowth would soon be exterminated, and the native grasses that proved so inviting in the early settlement of this country would promptly reappear, and our interminable woods, that do not afford a profit of one cent annually to the hundred acres, and which for the reasons I have given are becoming less produetive every year, would yield grass amply sufficient for all our stock, manure for our farms—obtained too from *external sources*—and meat, milk and butter for our tables. PRY.

Pendleton. Nov. 10, 1850.

Mode of Preparation and Cultivation of one acre of Land for Cotton in 1847.

THE land was light mulatto soil, with a deep red sub-soil, having been in wheat the previous year. I had it well and deeply turned with a turning plough early in January. In February it was sub-soiled to the depth of twelve or fourteen inches, with one of Dr. Broyles's sub-soil ploughs. I then had it run off thirty-three inches apart, and sowed over it seventy bushels cotton seed, and put on twenty good wagon loads of manure from the horse and cow lots, which was put in the furrows already opened, and immediately bedded on, so as to protect the manure. I planted my cotton the 1st of April; it being dry at that time, the seed planted did not come up as soon as was desired By the 6th of April, the seed sown in February had come up very nicely all over the ground. Knowing that much depended on a good stand, I had a Buzzard plough run through the middles, so as to leave the cotton on the ridges in something like rows. By the 12th of April I had a good stand, and had it put to a proper width at once, and ploughed soon after, with the common Bull-tongue, or Scotch plough. It then stood until the other crop was worked over; I then ploughed with the common Buzzard, and hoed it well, putting to a stand of eight inches in the drill. The summer proved to be a wet one, and I afterwards had it thinned a little. My object was to have a plenty of cotton on the ground if the summer should prove a dry one, well convinced that without a good stand it is impossible to make a crop of any thing, but especially in that of cotton, on poor land, as far north as this. It was ploughed again in the early part of June, and the grass cut out with the hoe; also, in July. The last ploughing was very light, as the cotton was likely to grow too much to weed. I used none but the Buzzard after the first plowing. There was nothing done to it after the 7th of July, except to chop through it with a hoe, in order to clear it of grass. I topped it the 1st August.

In August and Sept. I picked	800	lbs.
In October I picked	1000	"
To the 15th Nov. I picked	500	"
And afterwards	105	"
Total	2405	lbs.

It was much injured by the lice in the spring, and much more by the wet weather during summer. Had it been anything of a good year it must have made a third more—such was the opinion of those that saw it during the year.

One or two reflections and I am done.—There was no extra work done to the cotton after it was up. The results are to be attributed to the preparation of the land and the manure. Would it not be much cheaper, much better, and a great deal more profitable, to plant less, prepare better, and manure that which is planted more? JAS. G. SPEER.

September, 4th, 1850.

Rice Product on a Santee Farm.

IN the spring of 1845, after the lands had been put in good order, the planting was commenced on the 3d April, with thirty-two bushels, on three hundred acres of land. The first large rice I sent to the factors, Messrs. Legare & O'Hear, were

sold to Thos. Bennet, 8th Nov. for	$2,383 28
24th Nov., to J. Lucas	2,492 50
11th Dec., " "	2,367 50
12th Jan. J. M. Sharker, and others	1,076 63
16th Jan. J. Lucas	3,393 40
8th March	9,11 37
23d " J. Lucas	2,026 00
Total	$14,550 48

Seed was saved for the next crop, and some seed rice sold, not recollected. The mode of culture will be communicated at another time.

H.

An Appeal to the Farmers and Planters of the South.

"The bane and antidote are both before me."

To the members of our profession—the farmers and planters of the South—we wish to make a candid appeal. The fact can be no longer disguised—that great question which has for years past, been convulsing the Republic like an earthquake, has ceased to be a political dogma. It has swept all the political parties, all the religious denominations, all the anti-rentisms, fourrierisms and reform-isms, North of Mason & Dixon's line, into that foul abolition whirlpool, which is destined to engulf everything which comes within its contaminating reach.

Disrobed of all the clap-trap and humbug with which political charlatanry has enveloped it, it now stands before us a huge fact, pregnant with the issues of life and death to the Southern people. The danger is staring us in the face—it must be met—politicians cannot save us without we aid them, and fight manfully and earnestly, with the weapons of our profession. It is the duty of every individual when encompassed by dangers, to look about him well for every means of defence, every stronghold of safety. A general would be considered miserably deficient in tactics, who, while preparing for a mighty struggle, would allow his soldiers to be furnishing the enemy with supplies. Is not this our condition? Is there a day in our lives in which we are not strengthening their forces? Is there a village in the South, that does not anually send her thousands North, to build engines for her own oppression? Is there a school in the South, which is not filled with Yankee books? Is there a Farmer or Planter amongst us, who has not on his farm, hoes, axes, harrows, plows, chains, buckets, tubs, negro clothes, shoes, or something of the sort manufactured at the North? Why we daily meet Farmer's sons dressed out in sacks, vests, pants, and often shirts made by Northern women at a shilling a piece—and this while there are hundreds of poor women in the country at *home*, who furnish the material and knit stockings at twenty-five cents a pair. How many farmers have seriously thought upon what a woman earned per diem in the country? It is a matter worth looking into. There is an immense deal of productive labor therein lying idle—enough in every district to keep thousands of spindles in motion—to braid straw for the bonnets of husbandmen, and to sack, vest and pant the whole country.

It is high time we were looking into these matters. We hold it to be the duty of every Southern patriot to raise his own hogs, horses and mules, and be independent of Mr. Clay's Kentucky Regiment, to buy no article manufactured at the North, if he can procure one of domestic manufacture, that will answer his purpose. Every man must expect to meet with difficulties in so doing—but he is no lover of the South, who is unwilling to endure privations for the sake of the South. You may expect to hear "humbug, nonsense" thrown into your teeth often when you agitate it—it is the cant ever of those who would rather talk than act. Politicians may fizz and fume till they are out of breath—they may talk till their tongues wag weary, but all will avail nothing, unless the pocket nerve of these puritanical brethren of ours is touched. And this must be done by the *moral* action of the Farmer and Planter. Politicians may cut off if they like, this foul cancer which has been eating into our vitals, but we must begin to prepare the patient for the operation, by strengthening his system beforehand. So long as we prefer to buy Northern domestics, shoes, boots, tubs, buckets, et id omne genus, we need not look for much progress in the art of manufacturing at home. So long as we prefer to patronize Yankee newspapers full of horrid murders, foul scandals, fourrierisms, and dishwater poetry "*because its cheap*," we need not look for a healthy literature, or a refined taste at home. Every dollar given to a Northern newspaper or periodical is so much paid to support those who feel it a labor of love, to ridicule our ignorance and gullibility, and our institutions. Mark the panic already produced at the North by the movement of the seaboard Planters, vs. Yankee coasters. Will any man say, we have not the power in our own hands to starve them into compliance with our terms? No! but some will say "Humbug! People won't do it, they *will* buy where they think they can get things cheapest." He is no patriot who claps his hand upon his pocket when his coun is in danger. He will not fight when the drum beats to arms.

BROOMSEDGE.

Big Branch, Nov. 14, 1850.

Embanking.

Mexico, (S. C.) Nov. 12, 1850.

MESSRS. EDITORS:—It is alike due, to you as well as myself, that I should explain the reason why your letter written in Oct. last, was not more promptly replied to. I was spending the summer in the up country and it was directed to Pineville, my usual residence; therefore, I received it recently, and on my way down, I had the misfortune to sprain my wrist, and otherwise bruised, have not yet recovered from the effects. I will always with pleasure contribute any thing I can to your valuable paper. A better knowledge of agriculture and the improvement of lands is very much required. If the labor and time I have bestowed on my bank should induce others to improve useless lands, it would be gratifying to me. I long contemplated doing the work I have done; before I began I owned less than one fourth I now do, and had to purchase from four different persons before I could begin,—which I did in 1817—first intending to make a bank that would keep out such freshets as we usually have in summer. I abandoned that plan the next winter, (that commenced in Feb. 1817,) finding I should be continually liable to have it broken, and determined to increase the scale. It was an experiment, and one in which I was discouraged by every individual of my friends; but I had formed my plans, and could not think of giving up what I might make valuable. That I should not be injured if it proved a failure, I determined to do it at my leisure, and plant the usual crops, which I did, and my income was not affected. There was a great risk that I might not finish it as I was forty-nine years of age. I have cause to be thankful that I lived to see it completed in 1840. I had frequent high freshets during those years, and frequent breaks altogether not less than one mile. With the experience I have now, had I to do it again I should never have a breach. The river is extremely crooked, and what might be a scientific level, was of no avail, as the water embanked, i. e. rose higher in some parts against the bank than others. The only remedy, and an effectual one, was to take what I termed a natural level, by taking advantage when there was a considerable freshet against the bank, to drive stakes in the water and to take the level from those stakes. In the flood of 1840, I had several large breaks; I pursued the above plan, and made the whole bank level on that principle. In 1841, we had another flood *only three inches* lower than 1840, and I had the satisfaction to see the whole extent of the bank alike above the water and sustained no injury. My bank is four and a half miles in length, the base from thirty to fifty feet, the greater part forty feet, the average height eleven feet, and the quantity of land within, 1400 acres by survey since its completion. Mr. Ruffin measured the height and was disposed to put it at eleven feet, but I felt certain that it was full ten feet; in a very accurate description which he published in the Richmond Enquirer after he left this state, and which was afterwards copied in the Carolinian at Columbia, he put it at ten feet. Since 1841 I added two feet of earth to the top, and recently employed a man to take the average height; and he made it eleven feet, which I think correct, as I expected that the two feet would make one when settled. Those floods were the highest in the last 61 years, except that in 1796, which was two and a half feet higher than in 1840. I add some improvement to my bank every year, —you ask the result. I have been benefitted every year; my whole loss would not amount to one entire crop. I have not planted much cotton; my high lands are congenial to the long staple, but I have seen the swamp of these lands very productive in the short. I have found it convenient to plant corn for sale. In 1849 my crop was destroyed. I commenced to replant the 19th of June, and averaged twenty bushels. Although we have had so withering a drought this summer, (in a small section here greater than any place I have heard from) I have averaged twenty four bushels. We had a high freshet in August which

did not in the least affeet me. A large portion of the land is uneleared and eovered with eanes which sustain my stock, and without the bank many would be driven out and perish. I have had no other expense than shovels, spades and wheel-borrows; three hundred dollars would more than eover these expenses. It is, as you may suppose, highly gratifying to me, to have succeeded, notwithstanding the opinion of so many and more so, as some of my neighbors below me have eommeneed banking by eontinuing it from mine. I found in the proseeution of the work, the mental was greater than the bodily labor, viz: to seize every ehanee of putting hands on it and not injure or disturb the eare of the erop, or suffer dilapidation. At another plaee I drained and reelaimed some valuable land. If I eould have the pleasure of seeing one or both of you Gentlemen here, it would give me great pleasure to ride on my bank with you, and I eould exhibit other improvements which I must not mention, or I might be aeeused of boasting. I have within a few years retired from aetive business and resigned it to my sons, although I am still happy in the enjoyment of good health. I have endeavored to give as good a deseription as I eould, and fear I have intruded both on your time and patienee; but must ask the favor of you to exeuse me, and to say, if there is any point on whieh you wish information, I will give it with pleasure, and would be glad to hear from you, whether this has reaehed you. I think it proper to say, that the greatest number of laborers I ever had in a day was thirty-one—sometimes only two. To be watehful was my greatest labor. I gave moderate tasks, whieh made them prefer that work to any other, and gave no trouble.

With great respeet, I remain, gentlemen, your obedient servant, SAMUEL PORCHER.

OLD LEATHER FOR MANURE.—Whoever rode through any country village or large town in Ameriea, a few years ago, could not have failed to notice piles of old shoes, heel-taps, strings, and bits of leather, of every hue and description, forming a very gradually deeaying mass, which in the course of 20 to 30 years, might probably reaeh that state of decomposition that would entitle it to the distinction of a tolerable manure. In the mean time, a small pateh attached to to the house and work-shop, that furnished these sweepings, and the few fruit trees surrounding it, were absolutely starving for want of food, which might have been profusely afforded, by eonverting this unsightly heap into manure, by mixing with quieklime, strong ley, or sulphurie aeid, and transferring these ornaments of the road to the vegetables and foliage of the garden.—*American Agriculturist.*

Kicking Horses.

For the benefit of those who may have kieking horses, I will describe a plan made use of by me for the purpose of breaking a horse of this habit. I attaeh one end of a strong line to the hind pastern of the horse, and take it forward through the loop, fastened to the traee at the side of the horse, and attach the other end of the line to the bit of the bridle; a line attached thus at eaeh side of the horse, if left suffieiently long to just enable him to make a step, will at every kiek he may make, operate so severely upon his mouth as to cause him very soon to give it up as a bad job.

American Farmer.

The Farmer and Planter.

PENDLETON, S. C.

Vol. I., No. 10::::: December, 1850.

Our Second Volume.

ON the last page of this issue may be found the prospeetus of the Farmer and Planter for 1851. Two numbers yet remain to eomplete the first volume, but it being the last month of the year, it is proper to indieate something of our intentions and prospeets for the seeond volume. The sueeess of this year may be better adjudged by our readers than ourselves. In every enterprize, at the outset, diffieulties are to be expeeted, and we do not deny that we have had a full share; they have, however, one after another given away until we have a elear view before us. It has been a matter of regret to us that Farmers have not made a freer use of our pages, at all times open, in making publie their views and praetiees upon subjeets for the promotion of whieh, this paper was established.—The paper has not at all times eontained that amount of original matter that we eould have desired, and no doubt would have made it more aeeeptable and useful to our readers. *This state of things no longer exist, and if it were desirable we could now fill the entire sheet with original communications. We have pledged to our assistance in our new volume a corps of Southern correspondents that cannot be surpassed as agriculturists in North America.* We have reason to believe also from reeent demonstrations, that a host of praetical planters in the South and South West will eontribute to our pages. *Our arrangements are such as to make a decided improvement in the Farmer and Planter,* but they are all based upon the asssumption that those engaged in the eultivation of the soil, desire its eontinuanee, *and are ready to give that support it requires.* The subseription list so far has been equal to our expeetations, and all will bear us witness that we have not eomplained or blustered. We did not expect the reeeipts of the first volume would exeeed the expenses, and are not disappointed in this partieular, We eannot, however, eoneeal the fact, that we have not enough of the nature of the ehameleon to enable us to eontinue to feed on air, and must have some aliment better suited to our wants. This we believe we shall have, and be able to refute forever that quaint saying every where prevalent "nothing of the kind sueeeeds within the borders of South Carolina."—Without it the paper eannot go on! Why not send us, to sustain a journal devoted exclusively to the agrieultural interests, from every distriet in South Carolina, and from every eounty in the whole South and West, the names of one, two, and three hundred subseribers? Would not individual interests, and the welfare of the whole eountry be promoted in a degree more than the value of one, or a hundred dollars. We hope not to take leave of any of our old friends at the end of the year, but respeetfully solieit that every one enlist for us in his neighorhood, and forward to us a *club of ten or twenty subscribers* for next year's paper. We ask Postmasters, and friends to the eause of agrieulture every where to aet as agents. *The sooner clubs are made up,* and the names forwarded the better. It would be a *material advantage* to us to reeeive them during the month of *Deeember.* We say again to all "Fill up the flowing bowl until it runs over." And "we'll all merry, merry be" together.

Legislative Aid Again.

IN our last number we set up a claim in behalf of the agrieultural interests of the State to assistanee from the publie treasury. The observations, though intended immediately for South Carolina, are equally applieable in all respeets to Georgia. The wants and eapabilities are alike in both. The produetions are the same; the same destruetive method of eultivation has been pursued; the same remedies are to be applied, and one destiny ultimately awaits both. We eansearcely imagine there is to be found, in either, a single intelligent person, who is not in some degree sensible of the advantages, that would aeerue to the agrieultural eommunity by sueh an appointment as we pressed in our last. But its importanee, the impossibility of agriculture maintaining even its present footing, mueh less extending its eonquests over the elements of nature without availing itself of the fixed principles of seienee, farmers generally have not bestowed suffieient refleetion upon. Natural ageneies are every day being applied to do what human labor has heretofore done. Meehanieal eontrivanee is so applying the laws that govern matter as to leave but little for the physieal arm to do. The prineiples of seienee, like the rays of the sun, are radiating in all direetions. There would seem no region, neither in the bowels of the earth, nor in the skies above, to which the researehes of man are not about to penetrate. The wide ereation itself is as it were yielding to the dominion of human ingenuity. Another year and the Ameriean, English, German, and Freneh merehants will be holding eonversations, as it were in a group, aeross the Atlantie in the morning before breakfast. A hundred or two years is a very short time in the annals of a nation, but how great would be the ehange, eould one imbued with the progressive spirit of the present day step baek for this period. It has been seareely 300 years sinee so simple a thing as the saw-mill, impelled by other than hand power, was the wonder and astonishment even in England; now it is moved about by the road-side, as a wheelbarrow, wherever it may be needed. Said the Bishop of Eli, minister at that time to the Pope, "he saw at Lyons a mill driven with an upright wheel, and the water, that makes it go, is gathered into a narrow trough, whieh deliereth the

same water to the wheel. This wheel hath a piece of timber put to the axle-tree end, like the handle of a brock, and fastened to the end of the saw which, being turned with the force of water, hoisteth up and down the saw, that it continually eateth in, and the handle of the saw is kept in a rigall of wood from severing. Also the timber lieth as it were upon a ladder, which is brought by little and little to the saw by another vice."—This, when contrasted with the magnificent machinery of the present day, shows something of the progress of the *mechanical arts* under the direction of *scientific principles*. Nor has agriculture failed to have some share in the progress of things. The knowledge of the principles of vegetation has probably progressed more in the last 30 years than during the previous thousand, and of him who regards "book farming" as among the humbugs, we might well ask, why? For 4000 years agriculture toiled on as an animal in the tread-mill without making a single step's advance in the *first principles* of vegetable economy. The earth was furrowed with a forked stick or perhaps a wooden plow, the husbandman trusting without farther enquiry to the promise that seed time and harvest should never cease. The little progress, which tillage made, if progress it can be said to have had, under the guidance of *experience alone*, would seem to be a sufficient justification for some change; its advancement and success since its connexion with agricultural chemistry ought to point out, to the satisfaction of all, the course to be pursued. It would seem there has been sailing enough without the compass or guiding star. The way to independence, nay! opulence, is now open.

The husbandman must embrace science as a Bride. He must stretch forth his hand to gather the fruit. The harvest is in the field, and let the reapers go forth to cut and bind, but not to waste. Tuomey, Ruffin, and others, by a bird's eye view have discovered how vast is the wealth of the State, and how great the facilities of agricultural improvement. As a specimen of the richness of the marls, we have at hand an analysis from the plantation of Dr. Geddings, near Charleston, made by Prof. Shepard. It may be found in Prof. Tuomey's Report. We premise it by saying, we have looked in vain through the analyses of the United States, and abroad as far as practicable to find an equal in the *phosphate* of lime and magnesia, the very ingredients which analyses of cereals show the most valuable of all manures.

The specimen was slightly impregnated with bitumen, and stood thus:

Silica	18.60
Carbonate of lime	68.00
" " magnesia	1.20
Phosphate of lime and magnesia	9.20
Alumina	.40
Water	4.00
	101.40

This, with other analyses, is accompanied with the following remarks: "Prior to these analyses, it was difficult to account in any very satisfactory manner for the known efficacy of such marls in agriculture. Since the soils, on which several of them had been employed, were known by analyses to be no more deficient in carbonate of lime and magnesia than the prolific soils of the Mississippi Valley. The reason assigned for marling in South Carolina by Mr. Ruffin, viz: that carbonate of lime is thereby afforded to the land, does not appear to me to be the chief motive the planter has for keeping up this practice. It would rather appear that the soluble saline matter and bitumen are also among the active ingredients of this species of mineral manure. While the phosphate of lime and magnesia is that constituent, which in my opinion is paramount to all others."

It is for such expositions as this, that legislative assistance is asked. It is that a steady light may be shed upon the darkness, that rests upon the planting interests among us, that aid is sought. It is to accomplish that by concentration of means, which individuals are too weak to perfect. The sum of two or three thousand dollars, that is solicited, is so small a pittance, it is thought a body of legislators would blush to refuse it for such a purpose. Every agricultural society in the State ought to memorialize the legislature solemnly praying for the appointment of a State Agricultural Chemist. But as this may be too late for this year we confidently expect some friend to the great source of wealth, some member in *reality a patriot*, will present the matter, and if necessary insist in earnestness upon its consideration. Let the final vote be taken with the yeas and nays, that it may be a text book at home for examination and future reference. We have little doubt it will be the pride and pleasure of our legislators to give their seals to a measure so needful, and so promising in great and good results.

Suppose $20,000 had years ago been appropriated for distribution in sums of twenty-five, fifty, hundred, two and three hundred dollars as premiums for the best executed system of guard drains of a given length in each of the broken and rolling districts of the State, is it not probable, in the highest degree, that a large portion of the 800,000 acres now in a state of devastation, and a den for foxes, would be occupied by a thriving tenantry, realizing more than a handsome livelihood? Would not 500,000 acres of that which is cultivated, but so exhausted as only to half pay with its produce the labor of the husbandman, and consequently a ruinous business, have been so protected from washing and destructive rains, as to be highly productive capital? If so, the lands that are now valueless, and worse than valueless, because they make the proprietor poorer each successive year, would not only have been worth tens of millions of dollars in themselves, but would have retained millions more of capital that has emigrated to the West, and is forever lost to the State.

The population would have been increased, and the 14,000,000 acres of land now lying waste, narrowed down, thereby adding still more to the wealth of the State. It is not difficult to see that under such circumstances, the premium would in a very short time be returned in the public revenues to the source whence it came with sixty, or a hundred, or a thousand fold. Again, had a similar stimulant been applied for the drainage of the wet lands of the low country, the ends attained might not have been less important. The practice of ditching and draining might have become fashionable, as it is in Scotland where thirty millions of dollars have already been expended, and the swamps, that now deal disease and death to whomsoever and upon whatsoever their pestilential breath may fall, might have been made more productive than the lands of the Nile. The inhabitants, at least for almost the entire year, might have enjoyed a safe and salubrious atmosphere at home.

It is then the profoundest political economy as well as duty of the State to encourage the true principles of agriculture and development of State wealth. Every motive of power and greatness confirms the truth of this. If government attempt to assume an air of indifference, and throw the responsibility of an unenlightened course of husbandry upon individuals, and, they pursue such a method as to exhaust the land to such a point that the cost of labor exceeds the value of the product, their capital is wasted and themselves made poor. The wealth of the State being but the wealth of individuals, and the lands of the State, but the aggregate of plantations and farms of individuals, all are involved in a common ruin. On the other hand as the destruction of the parts is the destruction of the whole, so is the prosperity of its parts the prosperity of the whole.

Pork Making.

A Subscriber desires to know what it will cost to make a pound of pork, and whether we might not, at as little expense, make a pound of cotton? It is a question which planters frequently ask themselves, whether it is cheaper to make or buy pork for the use of their plantations. We give a statement of the facts of an experiment made in this place by Wm. Hubbard, Esq. It furnishes data from which a tolerably accurate estimate of the cost of pork may be made, in any locality, by varying the expense with the price of corn, or other food used:

Four pigs, averaging 80 pounds gross, were confined in a close pen, and fed on dough, made from the meal of one peck of corn, daily, for 210 days, when they were slaughtered and weighed neat 1230 pounds. The account will then stand as follows:

Four pigs, 80 lbs. each, at 2½ cts. gross,	$8 00
210 pecks (52½ bushels) corn, at 40 cts.	21 00
Cost of 1230 lbs of pork	$29 00

A little less than 2½ cents per pound

Nothing else was given to eat during the whole time, not even slops from the kitchen for drink, but pure cold water from the well only. The dough was divided, so as to allow them three meals daily, and was at first eaten up in a short time, but towards the last they scarcely consumed their allowance between meals.

This was an interesting experiment. We think, however, although the pigs were bought at two dollars each, if a correct account had been kept of their raising up to that time, the expense

would have been found to exceed that amount.

We are pleased that this subject has been brought before us. and hope our readers will duly weigh its importance. It is high time we were better informed in the business of pork raising, so that we may be enabled to put a stop to our yearly overwhelming Kentucky "invasions."—Let us learn to live within ourselves, and pay tribute not even to a Southern State whose leaders are traitors to the South. Our paper is not a political one, but we are Southern men *wholly* in principle and interest, and wish it to be distinctly understood, that we fire from behind no masked battery.

Since writing the above we find an excellent article on fattening pork, by H. L. Ellsworth, in the Patent Office Report for 1847, which we give below. From experiments made long since, by others we are convinced of the economy in grinding and cooking corn for hogs; and if corn and cob were ground together into *fine* meal, and that made into mush, we believe it would go as far towards fattening hogs as the same measure of meal without the cob. We have fed the dough of corn and cob meal very successfully. We have never tried cooking it, but have no doubt of the superiority of the mush. Corn meal is better for fattening than oat meal in as much as it contains a higher per cent. of the fat-forming, and less of the muscle-forming principle:

Experiments in Feeding, by Henry L. Ellsworth.

On the 24th of May I purchased four hogs, of the following weights:

No. 1 weighed 132 lbs. 4 oz. } both together weigh
" 2 " 150 " 4 " } ing 281 lbs., 8 oz.
" 3 " 157 " 4 " } both together weigh
" 4 " 120 " 4 " } ing 277 lbs., 8 oz.

I fed Nos. 1 and 2, to each three and a half pounds of Indian meal cooked, making to both seven pounds per day. The food I prepared as follows: I took fourteen pounds of meal, enough for two days, wet this with cold water to prevent lumps; then put it into a five pail iron kettle (full of boiling water, stirring it well,) covered over the kettle with a tight board; let the mush stand till morning; putting up dampers, the heat of the kettle and arches makes the mass boil a long time without wood.

On the 8th of June, fifteen days,

No. 1 weighed 149 lbs., 13 oz., a gain of 18 lbs, 9 oz.
" 2 " 165 " 13 " " 15 " 9 "

Both together having gained 34 pounds, 2 ounces in 15 days, and consumed 105 pounds of meal. If pork is worth 3 cents per pound gross, the gain in the hogs, viz. 34 pounds, 2 ounces, is $11 02, equal to very nearly 1 cent per pound for the meal, viz. 56 pounds per bushel, say 55 cents per bushel.

No. 3, as above on the 34th of May,
weighed..... 157 lbs., 4 oz.
No. 4, as above on the 24th May,
weighed..... 120 lbs., 4 oz.
Both together weighing ..... 277 lbs., 8 oz.

These I fed, on 14 lbs. of corn, 7 lbs. to each per day, with water, on the 8th of June, fifteen days.

No 3, weighed 179 lbs. 13 oz.--gain, 22 lbs., 9 oz.
No 4, " 146 lbs. " 25 lbs., 12 oz.

Both together, 48 lbs. 5 oz. in fifteen days.

Both together consumed 210 lbs. of corn, just double the quantity of meal fed to the other two. The 48 lbs. 5 oz. of pork at three cents per lb. gross, amounts to $1 45 cents making corn worth 38½ cents per bushel of 56 lbs. The hogs had salt, generally, in cakes, composed of ashes, three parts clay, one part saturated with salt, a most excellent mode of salting all kinds of stock. Those fed on corn drank freely of water. Those that eat mush would rarely drink any. After fifteen days the food was changed for twenty days; those that previously had corn, lived on mush, and vice versa. No. 3, was much affected by the too rapid change from dry corn to mush, the stomach having been contracted by digestion, only required by the concentrated nourishment of dry corn, could not bear the sudden extension which mush gave it, each hog having about eight pounds of mush three times a day, equal to twenty-four pounds per day. Here I may remark, also. what seems almost incredible, that fourteen pounds of good corn meal, thoroughly cooked will make ninety pounds of mush. so thick as not to run when taken out of the kettle. In the further experiment I omit No. 3, from the cause above, since being unwell, he did not gain over five pounds in twenty days. His case is added as a caution against too rapid change of diet. I proceed, therefore, with only the other three hogs, viz: Nos. 1, 2 and 4, and weighing as follows:

No. 1, weighed, on the 8th of June, 149 lbs. 13 oz.; on the 28th June, 189 lbs.—gain, 29 lbs. 3 oz.

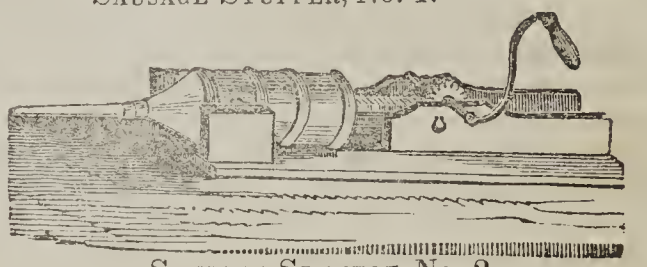
No. 2, weighed on the 8th June, 165 lbs. 13 oz.; on the 28th of June, 189 lbs.—gain, 23 lbs. 3 oz.

Both together, having gained 52 lbs 6 oz., in twenty days, and consumed, (at the rate of fourteen pounds per day,) 280 lbs., equal to 52 lbs. 6 oz. of pork, at three cents per lb. gross, as before, which gives $1 57, equal to thirty-one cents per bushel. This gain was less than the other experiment on corn, which is accounted for by the change of diet. No. 4, weighed, on the 8th of June, 146 lbs.; on the 28th of June, 166 lbs. —gain twenty pounds; just one pound per day. He consumed seventy pounds of meal, cooked —twenty pounds of pork, at three cents per pound gross, amounts to sixty cents; making the corn ground and cooked, worth forty-eight cents per bushel.

Had not No. 4, suffered somewhat by a too rapid change of diet from corn to mush, he would, doubtless, have made the second experiment with the meal, equal to the first experiment. Taking both the experiments together, which is hardly fair, as the exchange from highly concentrated food to that far more expansive, is disadvantageous—more so than from expansive to concentrated, raw food is, to the cooked food, as 68 to 103, making the gain by cooking, about fifty-five per cent. over uncooked food—or, three bushels of meal, cooked, is equal to four and a half bushels of dry, hard corn. It is generally estimated, that if corn be cut up and fed to hogs that fifteen bushels will fatten each one —that is give one hundred pounds of flesh. If hogs at gross weight, should be worth $3 per hundred, this would make corn worth just twenty cents per bushels. The hogs, in this case, were not confined in pens. If confined in pens, dry corn is worth thirty cents, and meal, cooked as above, is worth over fifty cents; so that there is a gain, by grinding and cooking, over feeding in the field, of one hundred and fifty per cent.—The expenses, however are to be deducted, and these depend on the price of wages, wood and milling. I am about to try Bogardus' mill, which, it is said, will, with two horses, grind three hundred bushels of corn and cob in a day.

Sausage Stuffers.

Sausage Stuffer, No. 1.



Sausage Stuffre, No. 2.

Owing to a more than usual supply of original matter, we have been able to give but few cuts in our last numbers, but as sausage making time is near at hand, we have made room for two cuts, (for which we are indebted to Messrs. A. B. Allen, & Co., N. Y.,) representing Sausage Stuffers, by the use of which one person may, it is said, do the work of ten in the old fashioned way. Such of our good housewives as like to have fine sausages —not little balls, half beaten, and rolled up to save trouble —we would advise to send immediately and get one. Most persons stuff their sausage meat in the small intestines of the hog—they are good whilst fresh, but if a full supply is laid in, before all are used they become dry and hard. It is better to use the large intestines—those of the beef are preferable. Put up in this way, they remain moist and juicy much longer than small ones. Before cooking they should be cut transversely from a half to an inch thick, and the covering taken off, then fried *secundum artem*, now who but a dyspeptic would dread the test.

Improved Harrows.—Who is this writer that says the old forked stick with wooden teeth for a harrow, is still used in Connecticut? Out upon the slanderer. Do not think any body will believe that, in this enlightened age of agricultural improvement, such a heathen can be found in the State of Connecticut, where all learn to read and write, and may learn to see, if not use good farming tools. And when once seen, can they ever after use such a miserable one as you describe? No sir. The idea is preposterous. You must take that back. Eat your own words. For the honor of our State, don't let it go abroad that "many of the farmers of this section of the State use no other harrows than those with wooden teeth." Why you might just as well say they are a set of wooden headed forked animals, that don't know any better. Thank fortune, nobody will believe such stupidity exists anywhere except in South Carolina or some other benighted land of heatheus, where they dig up the ground with hoes, or load manure into a cart with wooden trays, or some other practice equally behind the age. A wooden-toothed harrow in Connecticut, in the year 1850! I won't believe it! That is worse than Mr. Robinson's account of the Old Bog Meadow."

The above extract is taken from the October number of the American Agriculturist, and appeared over the signature of "Reviewer." It is so racy a paragraph, that it deserves general circulation, at least, through South Carolina.—It will be something new to the citizens of this state to learn, that in their "stupidity," and in

their "benighted land of heathens, where they dig up the ground with hoes, or load manure into a cart with wooden trays," they have murmured the prodigy that dare presume to vie with the dazzling genius of Connecticut in *wooden manufactures*. We had supposed, the world acknowledged her supremacy with an undisputed sway in this field, and whoever would venture in the race might follow "*proximus huic, longo sed proximus intervallo.*"

The Moluccas islands have been made to feel and dread her competition in the *spices*, the fertile valleys of the west to quake from fear of her monopoly in the production of *hams*, and the gardener driven in hopeless despair from his vocation as *seeds*man.

The people will entertain a grateful sense of the act of generosity, that has shown them how prolific they are in *wooden* genius.—Well! we live to learn and may gather information from a toad-eater.

From the Southern (Ga.) Sentinel.

Insect Physiology---The Boll Worm.

Mr. Editor:—I have concluded to write you an article or two on the insects which are injurious to the agriculturist of the South. I will begin with what is vulgarly called the "*boll worm*," a caterpillar, which, for the regularity of its visits and length of time it remains, we may consider as fixed upon us. This is decidedly the most destructive insect that feeds upon the cotton plant in this climate. Insects of some sort prey upon almost every species of the vegetable kingdom, and we must learn the habits and natural history of insects, if we wish to discover the most effectual remedies to prevent their depredations. This insect is an anomoly in the history of insects, for it is much more destructive to the plant, cotton, (*gossypium.*) for which it was never made, than to the one to which it naturally belongs, corn (*zeamays.*) If I am right in my supposition, this insect is the caterpillar we find in the end of ears or corn, eating the silk, and some little of the corn. This insect is at the North as well as at the South—in fact, it is wherever the corn grows, and will never depredate upon the cotton plant, unless through necessity. The moth of this caterpillar belongs to the order *lepidoptera.* The character of this order is, (according to the system of Dr. Leach)—wings four, covered with scales, tongue spiral, filiform. Linne divided this order into three generations, *papileo*, (butter-fly,) *sphinx*, (hawk-moth,) and *phalæna*, (moth,) which were characterized by the form of their antennæ. Genus Phalæna, antennæ moniliform, shorter than thorax, palpi very small and very hairy. Wings elliptic, equal, long. To this genus belongs the group agrotididæ, the larvæ of which lies concealed in the ground and feed by night, (as the cut worm;) and the group, Mamestradæ, the larvæ of which lies exposed and transform in the ground, as the cabbage caterpillar. The insect I will call Phalæna Zea, (corn moth) until more correctly classed, belongs, perhaps, to the latter group.

The P. Zea or corn moth, is of a pale yellow or a shining ash color—length of wings, one and one-eighth of an inch, the wings expand two inches horizontal, by the upper wings covering the lower; below the centre and near the border of the upper wings are two dark spots; there are two or three indistinct ones on each upper wing, end of the wing whitish, a wavy dark band near the border. Thorax slightly convex, dawny, proboscis folded spirally underneath, double, half inch long, eyes large, clear, yellowish green. Legs six, antennæ, fusiform, palpi very hairy, flies only late in the evening, and at night, lies concealed in the day time in jams of the fence, around stumps, and in the grass and weeds, flies rapid and low.

The maise, Phalæna, pairs with its mate as soon as found, (some insects of this ordes have a remarkable instinct that way;) the moth lays about seven hundred and fifty eggs on the fourth day, about the size of cabbage seed, of light cream color, and dies in three or four days afterwards. The moth sucks the nectar from the bloom, or rather between the calix and petals. In confinement they will suck water sweetened with sugar. The eggs of the first brood are laid on the silks of corn; if no silks, on the top of the corn, you may very often find them in the northern corn we plant for early roasting ears. The ova or egg will hatch in two or three days, the larvæ feeds upon the silk and the grains of the corn, remains in the ear for fourteen days, comes out and goes into the earth for about three inches, and is transformed into a chrysalis of bright, shining mahogany color, conical in shape seven-eighths to one inch in length; it remains in the ground from fourteen to sixteen days, when its transformation takes place and it comes out the moth I have above described.

The second brood comes out from the 15th of July to 10th of August; it now finds but little corn to go to (at least in this section of country,) and necessity compels it to deposite its eggs on the cotton plant. Their eggs are laid on the top bud, and the bud of the end of the limbs; sometimes, when very numerous and late in the season, on the leaves promiscuously. If, at the time of this deposite, the weather is dry and the sun very hot, the ova or egg becomes abortivie. Hence the phrase, "no worms of a dry year."

However, during the hottest and dryest season, enough will escape to do some damage. Thousands of the eggs and young larvæ are destroyed by ants, and the ichneumoniadæ. The larvæ spins around it a thin web when first hatched, for protection from the ants and other enemies, and will swing itself by a thread if it fall from your hand when first hatched, say five ar six days old—it decends from the tops of the cotton and the ends of the limbs in two or three days after being hatched out, begins its depredations on the forms by eating through the calix in the petal, (so small is the place that you can hardly discern it,) which makes the bracts or floral leaf turn yellow, and the form falls off; the larvæ does not wait for this, but is off to another and another, until it destroys four or five, when it comes to a boll into which it goes and lies concealed, if enough to feed on until the usual time of its transformation. The caterpillar is sometimes killed by hot sun while eating into a boll.

If we have a short season, we will, perhaps, have but two broods. This is the case in Tennessee, and sometimes in North Alabama. The year 1848 I made a good crop of cotton, but it was made after the disappearance of the caterpillar. I cannot account for their disappearance, for the season was favorable; they may have been destroyed by some of the ichneumoniadæ family, perhaps the white oblong dots we saw on them. I never saw them on the first brood or their eggs. But this is all hypothesis.

Another reason why they do not damage the Tennessee planters so much is, that he plants and grows corn all the season, and the moth lays her eggs on corn in preference to the cotton. We will see the difference between two broods and three. Say you have 200 moths to come out, one half are males; we take 100 females at 700 eggs each, say 70,000 caterpillars the first generation; 24,500,000 the second, now sum them up to the third, deducting half for males, and we have the enormous sum of, (if I have not miscalculated,) 8,575,000,000. This insect hybernates in the chrysalis state in the ground.

The larvæ or caterpillar when full grown will measure from one and a half it to one and three fourth inches in length; looks to a superficial observer, brown, pale yellow and light green, though it has eight longitudinal streaks, of white, brown and green, with one or two dots on each segment of the body along the lowest streak; it is smooth, shining, naked with a few hairs on each segment of the body. They are of a cylindrical form, tapering a little at each end, rather thick in proportion to their length, legs six before, eight central, and two anal. Head brown, smaller than body, oval. I know of no effectual means of preventing the ravages of this insect, but that the remedy is worse than the disease. Now, if we were to plant no corn, (zea mays) we might get entirely clear, perhaps, of this insect; but more anon. John W. Boddie.

Jackson, Miss., July, 1850.

Spent Tanners' Bark a good Manure for Strawberries.—Perhaps the following experiment with strawberries in tan, near Edinburg, may prove useful. The soil was very light and unfit for their growth, yet finer fruit, or of better flavor I have seldom seen. This was entirely owing to a covering of old tanners' bark, about an inch thick, being applied between the rows. The bark not only kept the ground moist and the fruit clean, but it is the material of all others in which this plant most delights. Many persons may have remarked how all plants, but particularly the strawberry, will root into the old tan of a bed in which they have been forced, and yet, because they know new tan will kill weeds, they do not think it valuable as a manure. In the same

garden were beds of strawberries, which had not been covered, but after growing and flowering well, these bore no fruit worth gathering (a very common thing if the soil is too light); others were almost burnt up, whilst those to which the tan had been applied were luxuriant, and the ground was covered with fine runners, fit to plant out, though the fruit was just in perfection.—*Gardeners' Chronicle.*

From the American Farmer.

Essays on various Subjects of Practical Farming.

BY EDMUND RUFFIN, OF VA.

ON DRAINING.

[*Continued from page* 136.]

Bottom lands of the kind under consideration, in their natural state, must have presented scenes of remarkable beauty. The clear stream, not as yet choked by the earth washed from cultivated high land, and rarely obstructed, flowed in a deep and meandering channel, bordered by high and dry margins. The springs, bursting out at the foot of the adjacent hills, either had cut sufficient passages to flow in little rills to reach the main stream, or their scant waters had sunk and disappeared in some sandy part of the soil—leaving but little space deformed by standing water or mire. The bottoms were for the greater part dry and firm, and were covered by magnificent forest trees of kinds suited to such soils—poplar, gum, ash, maple, and sycamore. The steep high hill-sides on each side, in some places jutting out and in others retreating, were covered by as noble oak and hickory trees. All these beautiful and fertile bottoms have long been cleared, cultivated, and very generally damaged greatly in value by their improper treatment.—Their original beauty can only be inferred from the parts too narrow to be worth bringing under cultivation, and which therefore remain in their natural state.

When the neighboring higher lands, and especially the bordering hill-sides, were cleared and cultivated, and their soil and even the sub-soil in many cases were washing down with every heavy rain, then commenced the ruin of both the natural beauty of the bottoms, and much of the available value for cultivation. Their drainage was still a later operation; and was generally conducted improperly, as well as the subsequent cultivation; so that the lands were more than half worn-out, before they had been half-drained. Still, much of value and fertility remain to be obtained by better methods; and the proper system of drainage, even if necessary to be made altogether new, will cost less than to continue to keep the old ditches in order.

The general courses of the valleys are usually crooked—the outlines of the bottom-land still more crooked, (being the boundaries marked by the irregular curves of the base of the hills—) and the stream, in its natural channel is more crooked than either. Besides the occasional changes of the course of the stream, made in seeking a lower and often a much longer channel, every considerable obstruction of the stream, by earth or the fixing of before floating rubbish, tends to produce some new direction and channel. Every long straight stretch of the stream increases its velocity, and makes it work to prolong that course by cutting into the earth at its lower end, and so scooping out what must make a very great crook and sudden turn in the stream.—Thus, the tendency of all such obstructions is to increase the crookedness and length of a stream, as well as to choke its channel and raise its level.

From high and hilly lands, the surplus water of heavy rains flows so rapidly as to produce torrents down the hill-sides, and high though transient floods along the streams, and sometimes over the bordering low grounds. Though so large a proportion of rich soil has been swept off the higher lands and deposited on the lower, as to have made the latter very rich in their natural state, still the larger proportion of the washed and transported earth was merely sand. These different kinds of deposits were often intermixed—but in many cases they appear in separate and distinct layers,

The errors of ordinary management of these lands, both of drainage and tillage, are too numerous to be described in detail. The most important of those which effect the drainage injuriously, are the following:—1st. Permitting the stream (if large) still to run in its natural crooked or obstructed channel; and, consequently, the level of the water to be made too high for the drainage of the land. 2nd. Thickets of rank weeds and shrubs and vines growing on the margins of the crooked stream, because inaccessible to the plough:—3rd. When straightning or altering the course of the stream, the cutting the new passage along one side of the low ground, adjoining the base of the hill-side:—and 4th. The use of open side and spring-ditches, subject to be choked more or less by every rain-flood.

The procedure, different in all these respects, necessary for the proper drainage of such land will now be stated, though in general and cursory manner.

Most of all the smaller streams in cultivated lands, have already been changed by ditches to straighter and better routs, though rarely to the best that might have been chosen. It is only as to some of the large streams that this has not been attempted, and at least partially effected.—The larger the stream, the more necessary and the more beneficial will be the improvement made, by straightning its course. But it has been in many cases left undone, because of the supposed difficulty of the work, or of legal obstacles, in consequence of different proprietors holding parts of a body of low ground, which can be drained properly only on a general plan, of extensive operation. I shall not stop to discuss the latter obstacles; but proceed as if they had been removed, if not by wiser legislation than has heretofore prevailed in Virginia, at least by private agreements and co-operative action of all the adjacent and interested proprietors.

When a large stream, having abundant fall is to be straightened, the new route should be chosen without regard to the old course, or to the line of the bordering high ground. The improver is usually tempted to adhere as much as may be to the most suitable parts of the old channel, because saving so much new work of excavation; or otherwise, to keep the new excavation along the line dividing the high from the low-land, to preserve the body of low and valuable land as much in large peices as possible—if not in one unbroken body, as a continuous side ditch would serve for. Both these objects offer important advantages. But either will be dearly bought, if at the cost of adopting an improper location for the main ditch.

As these bottoms were the richest lands, very few parts of them still remain uncultivated. The land having been made fit for the use of the plough, (as a draining implement,) and also partially dry, are useful facilities for subsequent operations for drainage. But the actual labors for drainage usually in existance will rarely serve as parts of a new and correct plan; and are rather hinderances than aids to the latter labors. The drainer must consider, and decide according to the particular circumstances of each case, whether to preserve any parts of the old ditches, or to adopt a new plan of drainage entirely, and abandon and destroy all the old work.

In commencing the improvement or renewal of the drainage of a considerable body of low-land of the kind now under consideration, the operation first in importance, though not necessarily first in time, is the straightening and proper location of the main ditch and the stream it is to carry and discharge. The whole ground, and every route, should be carefully examined, so as to choose the best possible course. This should combine as much as possible the different requisites of being the shortest proper route—running along the lowest ground—avoiding short curves when changing the direction—and obtaining as equal velocity as may be of all parts of the current. If straight courses are to be used at all, they should never approach very near at the point of a change of general direction in the ditch. Angles and even short turns by curves are altogether inadmisible.

A long straight course serves so to increase the velocity of a decending stream that its direction cannot be suddenly changed, without injury. If a turn of the ditch be made at ever so obtuse an angle, or by a very short curve, the rapid stream rushes against the side of the ditch which is directly in its previous straight course, washes out a hollow, which, if in clay soil is swept off to the next deeper and stiller water, or if sand, or gravel, is thrown across the ditch, immediately below. This operation proceeds slowly even in the ordinary flow. But when the stream is increased many-fold in volume and power, by rain-floods, then in a few hours a great chasm may be hollowed out into the land, and the designed channel dammed across just below, by the eddy

of the torrent so depositing the washed sand and gravel—and the then flood of water continues its straight course over the low-land, spreading and overflowing according to the level and the obstructions, until finding places of discharge into the main ditch, at lower points.

In bottoms of the kind under consideration, of soil and sub-soil more or less sandy, (or gravelly,) and bordered by high hills, from which sand is washed and brought down by every heavy rain—the stream, whether in its natural crooked channel, or in a properly located ditch or canal, necessarily must bring down much sand. It depends on the size, course, and loctaion, of the channel, and the abscence or presence of obstructions to the stream, whether this quantity of sand shall be frequently choking the passage, and require nearly all the accumulations to be removed by the farmer's labor—or otherwise that the sand shall be harmless, and even made serviceable, if there be ponds or other low place wanting raising. Every obstruction to the stream, whether by a fallen or floating branch of a tree becoming fixed and collecting rubbish—or by a sudden change of direction checking the current—or whatever cause may produce much inequality of velocity in the stream—all serve to cause the sand to be deposited at every place of comparatively still or eddying water. These particular places of accumulation require to be frequently cleaned of the sand.—Thus most of all the sand brought down will have to be thrown out of the ditch by hand, at an enormous expence of labor—and the repetition may be required, in part, by every flood of rain. Moreover, as these clearings of sand are required mostly at the particular points of obstructed water, the quantities of sand thrown out there on the banks become a cause of increased labor in throwing later sand, and of injury to the land so covered.

Now under the reversed conditions or of a proper location, as much as may be the different requisites stated above, a smaller ditch, or canal, will much better discharge the same volume of water—there will be less sand washed out of the banks and thrown into the channel—and the sand which is brought by the streams from their higher waters, and of which the access cannot be prevented, will be mostly carried off, without doing injury, by the regular action of the stream itself. This beneficial operation is produced by giving to the stream, in its new channel, equal and uniform velocity.

It is not necessary, in the begining, that the bottom of the ditch shall be brought to an equal grade, or rate of descent, throughout. If the general or average rate be sufficient, the parts of bottom left too high will be washed out deeper, and any too deep will be filled up by the washings from above; so that, if the location and course of the main ditch (or of any smaller ditch of like kind) be right, the grading will become regular. If there be too much fall, the ditch generally will be washed deeper; or will discharge more earth at its outlet, than is brought in at its upper end and sides. If there is too little fall, the reverse effect will be produced, and the ditch will be always retaining sediment or sand, because receiving more than it can discharge. But (as stated above,) the greater number of such bottoms were so graduated by the very manner of their natural formation, and the deposition of drifted sand and suspended clay, they are in the desirable medium between these extremes; and their streams placed in proper channels, have enough velocity to carry on steadily all the drifted earth received, and not enough fall to wash the channel much deeper, or injuriously.

Under such circumstances, if the stream is observed at any part of its course, it will be seen that the loose sand at the bottom is continually moved onward by the force and fall of the current. As there is no obstruction to its passage, the sand continues to move on, and will continue to move on, and will do so for any distance, if the same circumstances continue to operate. Whether the course is one mile or twenty miles does not affect this operation and result. So long as the passage is unobstructed, and the velocity of the water unchecked, and the fall is sufficient, the sand will be rolled on, slowly but steadily, towards the outlet or final place either of discharge or deposite. The finer earths, clay or mud, suspended in the water, of course will pass off still more rapidly, and to greater distances, than the heavier sand and gravel. Wherever the fall of the stream is much reduced, or changes to a level, as on reaching tide-water, or a mill-pond or lake, then the drifted earth will be deposited, (as before stated of streams in their natural channels,) and there the outlet of the ditch may require frequent removals of the accumulated sand, by hand-labor.

(*To be continued.*)

Practice and Theory.—The practice of agriculture has advanced with far greater rapidity than its theory. Indeed, so far in the back ground is theory, and so imperfect in its development, that it may be regarded as existing in expectation rather than in fact. The advancement of agriculture then cannot be ascribed to theory neither can it be said to be under its guidance or direction. There have been, no doubt, many suggestions which have sprung up from doctrines to a certain extent, which are theoretical, still the practice of agriculture is rarely governed by them.

The fact, however, must still be maintained, that its perfection can be obtained only by the aid of a sound theory. This will do for agriculture, what it has already done for astronomy, geology, and chemistry. That the practice of agriculture has advanced far towards pefection without the aid of theory is not very surprising, when it is considered that its operations are very simple and that the results flow from them with great certainty. This fact has prevented that special consideration of phenomena, which would have come to pass in more complicated arrangements. Besides the phenomena with which agriculturists are most familiar, are enveloped in a kind of mystery, and hence beyond his reach. He can, however, bring out the phenomena of vegetation in its season; the grass and grain springs up when he sows the seed; it grows up under his eye, though not in obedience to his will; he still stands, however, in the place of its proximate cause. He has learned by ample experience that its growth may be promoted or retarded by certain agents; yet the why and the wherefore he has not satisfactorily determined.—*Am. Jour. of Agriculture.*

A Permanent Pasture.

We have been asked, "*what grass seeds we would sow to form a permanent pasture, and in what quantities per acre?*" Our reply is: In the first place, we would sow in the month of August, after having first manured the land well. ploughed it deeply, harrowed and rolled it thoroughly, so as to bring it into the finest possible tilth. 10 lbs of timothy seed, ½ bushel Kentucky blue grass seed, 1 peck red tob grass seed, 1 bushel of orchard grass seed, ½ bushel of perennial rye seed, and 1 qt. sweet scented vernal grass seed.

The above grass seeds to be thoroughly mixed together before being sown, and, when sown, to be lightly harrowed in, and rolled.

If the ground had not been recently limed, in the course of the winter, when the ground was sufficiently hard from frost to bear the team without injury, we would haul on and spread 50 bushels of lime, or 100 of marl per acre.

In the succeeding spring, when the frost was fully out of the ground, we would sow 8 lbs red clover seed, and roll that in, so as to cover it, and consolidate the ground. A pasture thus formed, should be permitted to remain for the first year ungrazed and untouched by the sythe. If thus managed, it would form a permanent pasture—one which would last for a life time—of the most luxuriant character; provided every second year it was treated to a top-dressing, in which a bushel of salt to the acre formed one of the elements. Whenever top-dressed, the pasture should be harrowed and rolled. He who forms such a pasture will have done an act of justice to his stock, obeyed the promptings of humanity, set an example to his neighbors, and cannot fail to put money in his pocket.

American Farmer.

Farming.—Of all occupations on the face of the earth, farming is the most conducive to happiness. The employment of our first parents was tilling the land.—This occupation was the very one of all others to make Eden a paradise. It has the impress of God's choice upon it, and wisdom is the characteristic of a man who follows it in preference to all others. The thought which has obtained among many people, that agriculture is not so honorable as some other callings, is a machination of the devil to cheat them out of the greatest amount of happiness.

Southern Literary Messenger.

A Word About Gardening.—No one can be truly said to live, who has not a garden.—None but those who have enjoyed it can appreciate the satisfaction—the luxury— of sitting down to a table spread with the fruits of one's own planting and culture. A bunch of radishes—a few heads of lettuce—taken from a garden on a summer's morning for breakfast; or a mess of green peas or sweet corn, is quite a different affair from those bought at market in a dying condition, to be put away for use. And a plate of strawberries or raspberries lose none of their peculiar flavor by passing directly from the border

to the cream, without being jolted about in a basket until they have lost all form and comeliness. And yet, how many in the smaller cities and villages of our country, possessing every facility for a good garden, either through indolence or ignorance, are deprived of this source of comfort. And how many farmers, with enough land lying waste to furnish them with most of the luxuries of life, are content to plod on in the even tenor of their way, never raising their tastes above the "pork and beans" of their farthers.

Southern Planter.

To Extract the Essential Oil from any Flower.—Take any flower you choose, place a stratum in a clean earthen pot, and over them a stratum of fine salt. Repeat the process till the pot is filled; cover closely, and place it in the cellar. Forty days afterwards, strain the esscence from the whole through a crape by pressure. Put the esscence thus expressed, in clean bottles, and expose them for six weeks to the rays of the sun and the evening dews, to purify. One drop of this esscence will communicate its peculiar and grateful odor to a whole quart of water.

Ex. Paper.

People seldom improve when they have no other model but themselves to copy.

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PROSPECTUS

OF THE

FARMER & PLANTER For 1851,

A MONTHLY JOURNAL,

DEVOTED TO THE AGRICULTURE OF *THE SOUTH,*

AND ESPECIALLY ADAPTED TO ITS CLIMATE, PRODUCTIONS AND WANTS.

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Of those who have manifested an interest in the success of the Farmer and Planter, the Editors return a grateful recollection, and respectfully solicit their further co-operation to enlarge the circulation of the paper.

All who feel a desire that this work should be sustained, and a concern for the advancement of Agriculture are invited to subscribe themselves, and enlist as far as possible the patronage of their neighbors.

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SEABORN & GILMAN,
Editors and Proprietors.

Pendleton, S. C., Nov., 1850.